Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Carrier Current Systems, including	)	ET Docket No. 03-104
Broadband over Power Line Systems	)	
	)	
Amendment of Part 15 regarding new	)	
requirements and measurement guidelines for	)	ET Docket No. 04-37
Access Broadband over Power Line Systems	)	

REPLY COMMENTS OF MATSUSHITA ELECTRIC CORPORATION OF AMERICA

Matsushita Electric Corporation of America and its subsidiaries and affiliates ("Panasonic") respectfully submit these reply comments in support of proposals in the Commission's Notice of Proposed Rulemaking ("NPRM") in the above-captioned proceeding concerning rules and policies to govern delivery of broadband communications over power lines ("Access BPL").[1]

INTRODUCTION

Panasonic commends the Commission for fostering a favorable regulatory environment for delivery of broadband communications over power lines while protecting licensees of the radio spectrum. Both In-House BPL and Access BPL will create new opportunities for consumers to enjoy the full range of benefits using broadband communications.

[1] *Carrier Current Systems, including Broadband over Power Line Systems*, ET Docket No. 03-104; *Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems*, ET Docket No. 04-37, Notice of Proposed Rulemaking, 19 FCC Rcd 3335 (2004) ("*Notice*").

Although the Commission has adopted similar terminology for Access BPL and In-House BPL, the two are very different in technology and deployment, and should be treated differently. Some Access BPL systems may overlap the spectrum, especially between 2 and 30 MHz, that generally is used by existing and planned In-House BPL devices. While we fully support both types of BPL systems, the Commission should broaden its interference concerns and amend its proposed rule to address the likelihood of conflicting spectrum usage between Access and In-House BPL. Panasonic recommends defining spectrum rights on each side of a demarcation point that separates the consumer-owned premises electrical wiring from the wires owned and operated by the electric utility. Adopting such a distinction would prevent the potential for destructive interference in the operations of incompatible systems. Resolving the interference issues in this proceeding would foster competition and encourage deployment of broadband using power line technologies.

DESCRIPTION OF INTEREST

Matsushita Electric Corporation of America ("MECA") is the principal North American subsidiary of Matsushita Electric Industrial Co. Ltd., a world leader in electronics and wireless telecommunications technology. MECA and its subsidiaries and affiliates (hereinafter "Panasonic") manufacture and distribute a wide range of consumer electronics, information technology, and other electronic products. Panasonic has over 90 business locations in North America, including 12 manufacturing facilities that employ approximately 22,000 people.

Panasonic is a leader in home consumer products and has been designing and testing home networking devices that will be affected by the rules under consideration in this proceeding. For example, earlier this year Panasonic announced its development of the world's first broadband home networking technology using home wiring to transmit high definition

television signals throughout a home wherever there is an electric outlet. Panasonic announced, demonstrated and exhibited this new technology at the Consumer Electronics Show in January, 2004.[2]

BROADBAND COMMUNICATION OVER POWER LINES WILL BENEFIT THE PUBLIC

Panasonic supports the Commission's efforts to provide a regulatory environment that will promote growth of Access BPL. Because these broadband communication systems utilize existing electric utility wires that connect most American homes to the power grid, Access BPL promises to provide many homes with wired broadband service. Access BPL will provide competition to existing telephone and cable providers, and even may be able to serve homes in geographic areas that are unserved by other broadband technologies. Introducing competition among broadband distributors will drive broadband deployment and encourage the delivery of new and innovative broadband services.

PROPOSED UNINTENTIONAL RADIATION LEVELS AND INTERFERENCE IDENTIFICATION AND MITIGATION TECHNIQUES WILL ENSURE CO-EXISTENCE

In the Notice, the Commission recognizes that minimizing interference is an important policy goal and proposes rules appropriate to preserving the integrity of over-the-air communications capabilities of licensees using the radio spectrum. The Commission proposes that operators of Access BPL systems supply location and operation information for a central database to facilitate identifying the source of any harmful interference to licensed services. To alleviate any such interference, the Commission proposes to require that Access BPL devices and systems incorporate adaptive interference mitigation techniques that will permit reductions in

[2] *See* http://www.panasonic.com/consumer_electronics/pressroom/cont2.asp?Filter=12&cont_id=592 (visited June 18, 2004).

power and adjustments to frequencies to dispel the cause of any such interference. Finally, the Commission proposes to adopt and clarify certain measurement guidelines to ensure effective compliance with the existing limits of Part 15 of its rules.

Adoption of the Commission's proposals or similar methods will ensure mitigation of any interference that may result. In addition, several commenting parties suggest other measures. The National Telecommunications and Information Administration ("NTIA") submitted a substantial study of Access BPL radiation characteristics between 1.7 and 80 MHz.[3] In the study and its subsequent comments, NTIA focuses on (1) the interference risks posed by Access BPL systems and, if they are too high, how they may be reduced while still permitting Access BPL to operate; and (2) how to determine that interference originates from Access BPL systems and how to eliminate it if it does occur.[4]

NTIA suggests a number of refinements to the Commission's proposals, including transmitter notches to protect certain critical government frequencies and coordination in certain geographic areas. NTIA also proposes that Access BPL system operators be responsible for the radiation from their systems through the FCC's equipment authorization process.[5] Such a requirement would better ensure that the system as a whole complies with the Commission's incidental radiation requirements. Adopting this suggestion would ensure that the service provider has incentives to stay within the permitted radiation limits notwithstanding the type of equipment being used.

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[3] *Potential Interference From Broadband Over Power Line (BPL) Systems to Federal Government Radiocommunications at 1.7 – 80 MHz.,* NTIA Report 04-413, April 2004 ("NTIA Phase I Study") (submitted April 27, 2004).

[4] *See* Comments of NTIA (dated June 4, 2004).

[5] *Id.* at p. 7-8, 14-15.

NTIA proposes that In-House BPL devices continue to be subject to FCC verification through normal procedures.[6] The HomePlug Powerline Alliance also supports retention of the verification procedure for In-House BPL devices, noting the success of this approach.[7] We agree. Such devices are consumer products used in discrete homes to transmit data, music, and video through home wiring and are already in widespread use in the marketplace. Being situated in individual homes on the consumer side of the electric utility's plant is typical for Part 15 unlicensed consumer devices and creates a situation in which deviation of the device is unlikely.

The Consumer Electronics Association ("CEA") expresses support for limiting incidental radiation to Class B limits on the low voltage lines from the distribution transformer to the home, but notes that the Commission's proposed rule would appear to permit devices operating above 30 MHz to radiate at the higher Class A limit. Since the Class A limit was adopted with the expectation that radiation would not occur in close proximity to consumer electronics equipment in homes, CEA proposes that the Commission prevent interference to home consumer equipment by prohibiting Access BPL operations in the broadcast bands. CEA argues persuasively that the low VHF television band should be protected because of the high risk of interference to reception of television channels 2-6, especially to digital broadcast signals on those channels.[8] The Association for Maximum Service Television ("MSTV") also argues against Access BPL systems using the low VHF band, adding that most Access BPL systems use frequencies below 50 MHz so such a limit would not impair the roll-out of service.[9]

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[6] *Id.* at p.14.

[7] *See* Comments of HomePlug Powerline Alliance at p.5-6 (dated May 3, 2004).

[8] *See* Comments of CEA at p.5 (dated May 3, 2004).

[9] *See* Comments of MSTV (dated May 3, 2004).

We agree with CEA and MSTV on the importance of protecting reception of these signals. Reception in residential neighborhoods must be protected so long as these channels are used for broadcast television purposes, especially during the DTV transition. Given the on-going transition to DTV, we urge the Commission to consider in particular the comments of CEA and MSTV on protecting consumer reception of the low VHF TV channels.

INTERFERENCE BETWEEN ACCESS AND IN-HOUSE BPL MUST BE CONTROLLED

In addition to the suggestions of CEA, the Commission should consider in more depth the situation with regard to the signals on the low voltage drop that serves individual houses. If an Access BPL system is designed to allow its signals to enter the home's electrical wiring without a gateway, either by deliberate design or because of signal leakage through the transformer, a homeowner with In-House BPL devices will experience interference between the two types of operations seeking to transmit data on the same frequencies and wire. This would severely impede the operation of both services. The Commission sagely solicited comment on this issue in its Notice of Inquiry ("NOI"), but when comments were filed the deleterious effects of two different systems trying to operate on the same in-house wiring were not appreciated.[10]

The Information Technology Industry Council ("ITI") in its Comments cautions that while consumers using Part 15 devices must accept interference from other Part 15 devices under the Commission's regulations, actual occurrences of interference will create implementation challenges for all parties and that BPL providers may look to the Commission to determine which Part 15 devices should take precedence.[11] We agree, and suggest that because

[10] S*ee Carrier Current Systems, including Broadband over Power Line Systems,* Notice of Inquiry, 18 FCC Rcd 8498 at ¶ 15 (2003).

[11] *See* Comments of the Information Technology Industry Council ("ITI") (submitted May 3, 2004).

the potential for interference from Access BPL services to In-House BPL networks is high, the Commission should immediately adopt rules to protect consumer-owned equipment in the home. If, unknown to the homeowner, signals travel into the home unimpeded on the electric service line, interference to In-House BPL networks will result that would severely degrade or stop their operation. Allowing the electrical industry unimpeded control over in-house wiring also would have anti-competitive effects if it prevented cable, DSL, or any other broadband provider from using the in-house wiring.

The potential for destructive interference is of heightened concern because the new FCC rules will be promulgated at about the same time as new In-House BPL products and services are expected to flourish. Those applications scheduled for release in the near future requiring substantial bandwidth, such as ferrying multiple streams of full High Definition video programming to multiple sets within the home, would become almost impossible due to the derogation of available bandwidth occasioned by interference from the Access BPL signal on the home's inside wiring. Panasonic has developed an In-House BPL product for this purpose so that, among other things, all TV sets within the same home can be served with multiple streams of digital high definition video programming from a single location within the house, such as a DTV receiver, DVD player, cable or DBS set-top box or home server. This capability will accelerate the DTV transition in homes by providing all TVs a simple way to access a digital signal using existing electrical wiring in the home. The required bandwidth for doing so, however, presents a technological challenge whose solution would be seriously endangered if interference from Access BPL signals were to appear on in-house wiring. Were radio frequency interference of the nature presented by Access BPL to appear on in-house wiring, in-house networks would at least have difficulty operating and might be blocked completely.

We also note that multiple homes often are connected to the same side of the electrical step-down transformer used to provide the proper voltage to consumers' homes. Therefore, if the Access BPL signal is indiscriminately placed on this wire, the signals will invade multiple homes, including homes of Access BPL subscribers as well as non-subscribers. The effect is to remove consumers' ability to utilize the spectrum capabilities of their private in-house electrical wiring without their prior permission. This situation potentially creates a significant impairment to the operation of any networking equipment that uses the wiring, and this deleterious effect will exist in multiple homes.

To prevent such operational spectrum interference among devices, we suggest that the Commission effectively prohibit Access BPL signals from entering the private wiring of a home. A subscriber would at least be in position to associate the malfunctioning of existing home equipment with the event of his service initialization. Non-subscribing neighbors would have no means to know that radio signals were being carried into their homes over the electrical wiring and interfering with devices in their homes.

Commission rules governing the telephone and cable industries define a demarcation point between a service provider's plant and privately-owned home wiring.[12] The electric utility industry similarly identifies demarcation points. For all three industries the demarcation point often is considered to be close to or at the point where the wire enters the home (point of entry). This would be an appropriate point for the radio frequency energy to be removed from the wire and fed to subscribers by a wire or wireless connection. The NTIA's proposed definition of In-House BPL lends itself to an appropriate demarcation point for the purpose of separating the

[12] *See* 47 C.F.R. §§68.3, 68.105 (telephone); 47 C.F.R. § 76.5(mm) (cable). *See also Telecommunications Services, Inside Wiring Customer Premises Equipment, CS Docket No. 95-184; Implementation of the Cable Television Consumer Protection and Competition Act of 1992, MM Docket No. 92-260,* Report and Order and Second Further Notice of Proposed Rulemaking, 13 FCC Rcd 3659 at ¶¶ 4-17 (1997).

signals of Access BPL from those of In-House BPL. NTIA proposes to distinguish In-House BPL from Access BPL by providing that In-House BPL uses "electrical power lines that are not owned, operated or controlled by an electric service provider. . . . In-House BPL devices may establish closed networks within the user premises or provide connections to Access BPL networks, or both."[13] The proposed NTIA definition distinguishing Access BPL from In-House BPL provides a ready demarcation of consumer owned versus utility-owned wiring that also should define the point beyond which Access BPL signals should not be transmitted.

In order to permit consumers to use their own in-house wiring to network applications within their homes, Access BPL operators should be required to eliminate any interference with In-House BPL. There are a number of Access BPL architectures available that can prevent this type of interference. One is to use a WiFi access point to deliver the network from the transformer to the subscriber's home. Amperion, for example, can accomplish its links wirelessly.[14] Another way would be to run a separate data wire the short distance from the transformer to the home, where a modem could terminate the wire and provide access. This is the architecture that cable systems use for broadband access service using cable modems. Or the Access BPL can be terminated at a modem or gateway at the electrical power entrance to the home and a filter installed to prevent radio frequency interference from Access BPL signals from contaminating the consumer's in-house data communications network. In some sense, the architecture used by telephone companies for DSL service reflects this approach in that DSL signals are not imposed onto the consumer's in-house data network.

[13] Comments of NTIA, *supra* at p.4.

[14] *See* Amperion website at: http://www.amperion..com/products.asp (visited June 18, 2004).

CONCLUSION

Panasonic supports reasonable interference mitigation rules that will allow a robust industry to develop and provide Access BPL services. We believe, however, that spectrum interference and anticompetitive effects will be created between Access BPL and In-House BPL devices if they operate on the same frequencies and are allowed to inter-mix along the same wire. Therefore, we request that the Commission address the wired spectrum issue and provide that Access BPL signals should be received through a separate line or wireless connection. FCC action on this request would provide the means by which both industries could reasonably expect to proceed.

Respectfully submitted,

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